

Serial No. 10/709,999
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This listing of claims replaces all prior versions and listings of claims in the application.

In the Claims:

1. (currently amended) A method of patterning a magnetic tunnel junction (MTJ) stack comprising;

forming an MTJ stack having a free layer, a pinned layer and a tunnel barrier layer disposed between said free layer and said pinned layer;

| forming a conductive hard mask overlying masking a first area of said MTJ stack while exposing said free layer of said MTJ stack in a second area;

| rendering said free layer electrically and magnetically inactive in said second area; and

| forming a conductive line contacting said hard mask, said hard mask conductively interconnecting said MTJ stack to said conductive line.

2. (original) A method as claimed in claim 1, wherein said stack is formed over one or more interlevel dielectric layers in which one or more respective metal conductor layers are disposed.

3. (original) A method as claimed in claim 1, wherein said free layer is rendered electrically and magnetically inactive through conversion to an inert compound by chemically altering its composition.

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4. (original) A method as claimed in claim 3, wherein said free layer is chemically altered by plasma treatment.

5-7. (cancelled)

8. (original) The method of claim 5, wherein said chemical alteration further includes acceleration of oxygen ions.

9. (currently amended) The method of claim 3, wherein said free layer is chemically altered by exposure to a chemical agent including at least one agent selected from the group consisting of fluorine and, ~~–~~ carbon, and nitrogen.

10. (original) A method as claimed in claim 1, wherein said free layer is rendered electrically and magnetically inactive through oxidation.

11. (original) The method of claim 3, wherein said free layer is chemically altered by anodization.

12. (original) The method of claim 1, wherein said free layer is rendered electrically and magnetically inactive by physically altering its composition.

13-15. (cancelled)

16. (currently amended) The method of claim 12, wherein said free layer is rendered electrically and magnetically inactive the additional atoms are added by diffusion of at least one agent out of an adjacent “donor” film into said free layer, said of at least one agent selected from the group consisting of oxygen, nitrogen, fluorine, and carbon.

17. (currently amended) The method of claim 1, wherein said masking is conducted by forming a hardmask including hard mask includes at least one material selected from the group consisting of titanium nitride (TiN), and tantalum nitride (TaN), and a sacrificial material, wherein said free layer includes iron, and said tunnel barrier layer includes at least one material selected from the group consisting of aluminum oxide and magnesium oxide.

18-20. (cancelled)

21. (new) The method as claimed in claim 1, wherein a lower surface of said conductive line contacts said hard mask.

22. (new) The method as claimed in claim 17, wherein said hard mask includes titanium nitride (TiN).

23. (new) The method as claimed in claim 1, wherein said free layer includes iron, and said tunnel barrier layer includes magnesium oxide.

24. (new) The method as claimed in claim 1, wherein said step of rendering said free layer electrically and magnetically inactive in said second area forms a moisture barrier for protecting said tunnel barrier layer including magnesium oxide.

25. (new) The method as claimed in claim 1, wherein said free layer includes nickel-cobalt-iron (NiCoFe).

26. (new) The method as claimed in claim 1, wherein said free layer includes cobalt-iron-boron (CoFeB).

27. (new) The method as claimed in claim 26, wherein said step of rendering includes oxidizing said CoFeB of said free layer to form a region having glassy oxidized phase.